

(3) Provisions for shipments of Class 7 (radioactive) materials by air are described in §§175.700–175.705 of this subchapter.

(4) Provisions for shipment of Class 7 (radioactive) materials by vessel are described in §§176.700–176.720 of this subchapter.

(e) A package exceeding the maximum surface radiation level or maximum transport index prescribed in paragraph (a) of this section may not be transported by aircraft.

[Amdt. 173–244, 60 FR 50307, Sept. 28, 1995, as amended at 63 FR 48568, Sept. 10, 1998; 66 FR 45380, Aug. 28, 2001; 69 FR 3691, Jan. 26, 2004]

§ 173.442 Thermal limitations.

A package of Class 7 (radioactive) material must be designed, constructed, and loaded so that—

(a) The heat generated within the package by the radioactive contents will not, during conditions normally incident to transport, affect the integrity of the package; and

(b) The temperature of the accessible external surfaces of the loaded package will not, assuming still air in the shade at an ambient temperature of 38 °C (100 °F), exceed either—

(1) 50 °C (122 °F) in other than an exclusive use shipment; or

(2) 85 °C (185 °F) in an exclusive use shipment.

§ 173.443 Contamination control.

(a) The level of non-fixed contamination must be kept as low as reasonably achievable on the external surfaces of each package, conveyance, freight container, and overpack offered for transport, and the internal surfaces of each conveyance, freight container, and overpack in which inner packages or

receptacles of Class 7 (radioactive) materials are offered for transport.

(1) Excluding the interior surfaces of the containment system of packages and the internal surfaces of a conveyance, freight container, tank, or intermediate bulk container dedicated to the transport of unpackaged radioactive material in accordance with §173.427(c) and remaining under that specific exclusive use, the level of non-fixed contamination may not exceed the limits set forth in Table 9 and must be determined by either:

(i) Wiping an area of 300 cm² of the surface concerned with an absorbent material, using moderate pressure, and measuring the activity on the wiping material. Sufficient measurements must be taken in the most appropriate locations to yield a representative assessment of the non-fixed contamination levels. The amount of radioactivity measured on any single wiping material, divided by the surface area wiped and divided by the efficiency of the wipe procedure (the fraction of non-fixed contamination transferred from the surface to the absorbent material), may not exceed the limits set forth in Table 9 at any time during transport. For this purpose the actual wipe efficiency may be used, or the wipe efficiency may be assumed to be 0.10; or

(ii) Alternatively, the level of non-fixed contamination may be determined by using other methods of equal or greater efficiency.

(2) A conveyance used for non-exclusive use shipments is not required to be surveyed unless there is reason to suspect that it may exhibit contamination.

Table 9 is as follows:

TABLE 9—NON-FIXED EXTERNAL RADIOACTIVE CONTAMINATION LIMITS FOR PACKAGES

Contaminant	Maximum permissible limits		
	Bq/cm ²	uCi/cm ²	dpm/cm ²
1. Beta and gamma emitters and low toxicity alpha emitters	4	10 ^{−4}	240
2. All other alpha emitting radionuclides	0.4	10 ^{−5}	24

(b) In the case of packages transported as exclusive use shipments by rail or public highway only, except as provided in paragraph (d) of this sec-

tion, at any time during transport the non-fixed contamination on the external surface of any package, as well as on the associated accessible internal

surfaces of any conveyance, overpack, or freight container, may not exceed ten times the levels prescribed in paragraph (a) of this section. The levels at the beginning of transport may not exceed the levels prescribed in paragraph (a) of this section.

(c) Except as provided in paragraphs (a) and (d) of this section, each conveyance, overpack, freight container, tank, or intermediate bulk container used for transporting Class 7 (radioactive) materials as an exclusive use shipment that utilizes the provisions of paragraph (b) of this section, § 173.427(b)(4), or § 173.427(c) must be surveyed with appropriate radiation detection instruments after each exclusive use transport. Except as provided in paragraphs (a) and (d) of this section, these items may not be returned to Class 7 (radioactive) materials exclusive use transport service, and then only for a subsequent exclusive use shipment utilizing one of the above cited provisions, unless the radiation dose rate at each accessible surface is 0.005 mSv per hour (0.5 mrem per hour) or less, and there is no significant non-fixed surface contamination as specified in paragraph (a) of this section. The requirements of this paragraph do not address return to service of items outside of the above cited provisions.

(d) Paragraphs (b) and (c) of this section do not apply to any closed transport vehicle used solely for the exclusive use transportation by highway or rail of Class 7 (radioactive) material with contamination levels that do not exceed ten times the levels prescribed in paragraph (a) of this section if—

(1) A survey of the interior surfaces of the empty vehicle shows that the radiation dose rate at any point does not exceed 0.1 mSv/h (10 mrem/h) at the surface or 0.02 mSv/h (2 mrem/h) at 1 m (3.3 feet) from the surface;

(2) Each vehicle is marked (e.g. stenciled) with the words “For Radioactive Materials Use Only” in letters at least 76 millimeters (3 inches) high in a conspicuous place on both sides of the exterior of the vehicle; and

(3) Each vehicle is kept closed except for loading or unloading; and

(4) Each vehicle is placarded in accordance with subpart F of part 172 of this subchapter.

(e) If it is evident that a package of radioactive material, or conveyance carrying unpackaged radioactive material, is leaking, or if it is suspected that the package, or conveyance carrying unpackaged material, may have leaked, access to the package or conveyance must be restricted and, as soon as possible, the extent of contamination and the resultant radiation level of the package or conveyance must be assessed. The scope of the assessment must include, as applicable, the package, the conveyance, the adjacent loading and unloading areas, and, if necessary, all other material which has been carried in the conveyance. When necessary, additional steps for the protection of persons, property, and the environment must be taken to overcome and minimize the consequences of such leakage. Packages, and conveyances carrying unpackaged material, which are leaking radioactive contents in excess of limits for normal conditions of transport may be removed to an interim location under supervision, but must not be forwarded until repaired or reconditioned and decontaminated, or as approved by the Associate Administrator.

[79 FR 40616, July 11, 2014]

§ 173.447 Storage incident to transportation—general requirements.

The following requirements apply to temporary storage during the course of transportation but not to Nuclear Regulatory Commission or Agreement State-licensed facilities or U.S. Government-owned or contracted facilities.

(a) The number of packages and overpacks bearing FISSILE labels stored in any one storage area, such as a transit area, terminal building, storeroom, waterfront pier, or assembly yard, must be limited so that the total sum of the criticality safety indices in any individual group of such packages and overpacks does not exceed 50. Groups of such packages and overpacks must be stored so as to maintain a spacing of at least 6 m (20 feet) from all other groups of such packages and overpacks.

(b) Storage requirements for Class 7 (radioactive) material transported in